

youngest in this year was fifty-three, and the oldest—Baron Armstrong—was ninety.

Last year—1902—the same story is repeated. Five millionaires died in 1902, and their average age is seventy-eight. It is also worth remarking that if our inquiries are carried further, it will be noticed that longevity is a striking feature of those whose estates are valued at between 500,000*l.* and 1,000,000*l.*

It seems to me that one might have expected this state of things to exist, if we consider how the wealthy—through their wealth—can secure the advantages of change of scene, change of climate, scientific progress, and last, but not least, the aid, skill and advice of our greatest doctors and surgeons. One would have liked to take up other points, but I fear I have already taken up too much of your valuable space.

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In some respects it appears to me that the excellent remarks of Sir Oliver Lodge and Mr. A. R. Wallace (*NATURE*, lxvii. pp. 270, 296) leave this difficult subject in an unsatisfactory condition.

All inquirers have perceived that great men are of two types, and it would conduce to clear thinking if we could accustom ourselves to classify them under different names. To define them exactly is impossible, for no man of great genius is without talent, and no man of great talent is without some genius.

The first class, to which I should prefer to restrict the name genius, may be described primarily as men of fine, delicate, sensitive, impressionable constitution, and strong, restless innate tendencies which appear early in life, as a rule, and take their own shape. These men work energetically, often at high pressure, and in general die comparatively young, or at least do not often reach a robust old age. They are fearless rather than circumspect, have the ability and courage to open out in new directions of thought and action, are creative, original, daring, and possess either an exquisite sensibility or a wonderful and tenacious faculty of logical thought. They are, as it were, impelled from within, and are thus able to resist the almost overwhelming influence of social example, and the ties of relationship, exhibiting, for the most part, more independence than their times can tolerate or understand. They introduce most of the new ideas into the world, and touch nothing they do not transform. They are always men of strong practical feeling in their own special vocation, but scarcely ever practical in the sense of turning every opportunity to their own advantage. Indeed, the height to which they soar is largely due to their detachment from worldly interests and conventions, and their lack of regard for self, though this may be consistent, and is often found in conjunction, with excessive vanity and egotism. They take a sympathetic interest in human affairs, and are most commonly liberal in sentiment, but their actions are often narrow and sometimes indefensible. Frequently they are simple, direct, guileless, not so much unversed in as opposed to the diplomatic ways by which men succeed; but contact with the world is apt to spoil them, and their very logic leads them into extremes. Despite abundant energy, their powers of resistance are not great, and they most often reach high eminence in music, poetry, painting, philosophy and science, where activity lies somewhat remote from the tension and bustle of practical life. They are said to be inspired because of the enthusiasm, and unconscious working, of their minds.

The second class I would describe as men of talent. When preeminent they exhibit striking aptitude in learning and in imitation, and develop extraordinary powers of work. They are generally men of strong, vigorous build, firm mind and healthy body. They are, accordingly, marked by general sanity of ideas, preferring to think and act in conformity with prevailing conventions rather than to startle men with novel views. Except perhaps in their own particular sphere of activity, they are conservative in character. They possess a clear conception of the value of this world's goods and graces, accumulate honours, and become, in general, more reputable than illustrious. They do the bulk of the world's hard mental work, and are more concerned to protect and

improve existing institutions than to seek new methods or discover new paths. When they do achieve greatness it is more by virtue of immense knowledge and systematic exposition, or of amazing industry and technique, than of original and independent views. What Galton says of English judges applies with all its force to men of talent in general: they "are vigorous, shrewd, practical, helpful men; glorying in the rough-and-tumble of practical life, tough in constitution and strong in digestion, valuing what money brings, aiming at position and influence, and desiring to found families."

As described, these are of course ideal types, to which actual men more or less approximate. But they are well enough distinguished in nature for mutual antagonism. The man of talent is apt to laugh at the genius; and the genius too often sneers at the man of talent. The one is pushing, the other retiring; the one looks for and obtains immediate reward, the other works for fame and posterity. Compared with the man of talent the genius is a rare phenomenon. But this may be because so many geniuses are sacrificed before their activity has produced lasting results, for the existing environment is not favourable to them. As typical of the genius I would name Chopin, Mozart, Beethoven, Raphael, Goethe, Shakespeare, Keats, Shelley, Kepler, Galileo, Newton, Faraday, Descartes, Spinoza; and of the great men of talent Aristotle, Velasquez, Virchow, Hegel, and, indeed, those numerous men who have attained eminence rather through enormous receptivity and power than by acuteness and creative faculty.

These types once fairly discriminated, it is not so difficult to determine their relation to the struggle for existence. Great men, in proportion as they approach the second type, are the more clearly useful in the immediate needs of life, and this, in plain language, is the only usefulness conserved by natural selection. Whoever supposes that natural selection is a being with eyes directed towards the future has wholly misconceived it. Men of genius not only leave few, inferior, or no offspring, but too often find it difficult to live. And explain it how we will, the public opinion that neglects men of genius during their lives is natural selection. Genius never conquers except when the ideas and works to which it gives origin are taken up and put to practical use by men of the second type. If the ideas are beyond the men of talent, they are as much neglected as the geniuses, until such time as the world has made progress in its own slow way. There are many ideas now in printed books which are waiting for recognition by men of talent. Much of the work of genius has very little bearing on the struggle for existence. Music and painting, for example, except in so far as they are a source of profit to instrumentalists and collectors, and to teachers of these arts, do little more than give pleasure and consolation mostly to those who seek refuge from the struggle which, though concealed by many conventions, is real and searching enough beneath the surface of civilised life. The error lies in supposing that everything comes into existence by virtue of natural selection, when in fact natural selection is only a convenient expression to sum up the action of causes which conduce to survival and persistence. In nature there is great variety, and genius, so far, is one of the varieties which often recur, but scarcely ever survive even for two generations. It is a rare and delicate thing, and the utmost we can hope for it is that endeavours may be made to collect and preserve it like some hot-house plant, in order that it may suggest combinations which men of talent may put to practical account.

The position of the second type in the struggle for existence is beyond doubt. The stability of a country and its place among the nations depend upon the number and ability of men of this stamp. They obtain rewards precisely because of their usefulness. They found families by reason of their strength and virility, and their steadfastness, cheerfulness and conservatism of character are as much the expression of their bodily make as the instability and originality of the man of genius are the expression of his keen sensibility, and his daring suggestions a proof of bodily discomfort and profound dissatisfaction with the conditions of life and knowledge.

But we are only on the verge of these studies, which are hardly yet within the reach of scientific method, and we have acquired very little insight into the collective action of

natural selection in preserving nations. Our gaze is too intently fixed on the individual struggle, and we are more ready to revert to old abstract notions of inner springs and guides, set for some noble and unknowable purpose, than to develop the one fruitful idea of progress by the natural and predictable interaction of parts. ARTHUR EBBELS.

February 16.

THE ORGANISATION OF FISHERY RESEARCH.¹

IN August, 1901, a committee, since known as the Committee on Ichthyological Research, was appointed by the Board of Trade in order "to inquire and report as to the best means by which the State or local authorities can assist scientific research as applied to problems affecting the fisheries of Great Britain and Ireland, and in particular whether the object in view would best be attained by the creation of one central body or department acting for England, Scotland, and Ireland, or by means of separate departments or agencies in each of the three countries." The report of this committee, together with the minutes of evidence laid before it, has now been published.

The appointment of a committee of inquiry by Government is, I am afraid, generally regarded as having the effect of postponing, or even avoiding, any effective action on their part. In the present case, however, we have the somewhat exceptional situation of real action being taken whilst the inquiry was still in progress, and that action in a direction which is, to some extent, at variance with the course eventually recommended by the committee. For whilst the Ichthyological Committee were still engaged in hearing the evidence of experts of various degrees of authority, and by all the subtleties of cross-examination causing them to commit themselves—as is plainly indicated in the evidence of most of the witnesses—to statements which, after a little reflection and in more collected and rational moments they would rather have expressed differently, the Government decided to take part in the scheme of international investigations which was receiving somewhat rough treatment at the hands of the committee, and persuaded Parliament to vote considerable sums of money for that purpose. The Government are to be congratulated upon having taken definite practical action, even though a minor result of that action has been to cause the report of their Ichthyological Committee to be brought, as it were, with but enfeebled vitality into the world.

The question referred to the committee was, nevertheless, one of considerable importance, and their answer to it—if not of immediate moment—will probably be not without influence in the future. In a general way, the question how the State or local authorities can best assist scientific research as applied to fisheries is quite simply answered by saying that they can do so by supplying the most capable and trustworthy scientific men whose services they can obtain with the necessary funds to carry out such research. The only real difficulty is to find some scheme of organisation which will ensure that the men employed are both naturally and by experience and training the best fitted for the work, that thorough, accurate and really scientific workers are distinguished from such as are ostentatious and superficial, and that those failing to maintain their efficiency, or to carry out the work assigned to them, are speedily eliminated.

Two other matters of importance are, however, involved in the terms of reference of the committee. In the first place, what should be the exact relations

existing between the men charged with carrying out scientific research and those whose duties are connected with fishery administration; and, in the second place, to what extent is it advantageous that the researches carried on in different parts of the United Kingdom should be placed under one central control.

On the subject of the relations of the administrative and scientific departments, the committee express a quite clear and definite view. They are of opinion that the responsibility for and the control of the scientific investigations should be in the hands of the central administrative authority, and that the most important of the researches should be directly carried out by this authority. In suggesting a new arrangement for England, they, however, propose the establishment of a central council, composed, in approximately equal numbers, of administrative and scientific men, whose duty it should be to advise the administrative authority (Board of Trade) on all matters concerning scientific research. No provision is suggested by means of which this council could enforce its decisions.

In my opinion, it is open to the gravest doubt whether such a direct control of scientific work by an administrative body is likely to lead to satisfactory results. The trustworthy information and assistance required by the administrative body are, I feel sure, much more likely to be obtained from a more independent scientific authority acting as advisers to the administrators, an authority the preponderating influence of which is in the hands of recognised men of science. Such an arrangement will render the selection of capable naturalists far more probable, and will ensure the naturalists being in a position to give that complete concentration of their whole energies upon the problem in hand which is so absolutely essential to successful scientific work. The claims of administration are immediate and pressing, and when they are combined with the claims of scientific research, experience has repeatedly shown that the latter are bound, sooner or later, to take a secondary place. Huxley's experiences as an inspector of fisheries are a sufficient illustration of this point.

The objection urged by the opponents of the view here advocated is that the method is less likely to lead to immediate practical results. Unfortunately, there is no short and easy road to results which are sound and scientific, and the adage "More hurry, less speed" is, I fear, more than usually applicable to work of this kind.

On the second question—a question to which the attention of the committee was particularly directed—namely, to what extent there should be central control of the investigations throughout the United Kingdom, the committee also make a definite recommendation. Recognising the fact that separate administrative authorities are already established in England, Scotland, and Ireland, and in view of their opinion that the scientific investigations should be controlled by the administrative authority, the committee consider that the researches in the three portions of the kingdom are best kept separate. In order, however, to secure some measure of uniformity of action amongst the three bodies, they propose the establishment of a quarterly conference of experts representing the English, Scottish, and Irish departments. But there seems little likelihood that such a conference, which, as in the case of the English council, it is not proposed to endow either with authority to enforce its decisions or with any power of action of its own, would be an instrument of much effective value. The scheme is in part the result of a desire, with which I entirely sympathise, to ensure to the workers the maximum of freedom and individual initiative, combined with such centralisation as shall prevent undue or unnecessary waste of energy. But would not these objects be attained more effectually

¹ Report of the Committee on Ichthyological Research. (London: Eyre and Spottiswoode, 1902.) Price 4s. 1d.